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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/661,849 | 09/12/2003 | Alexander A. Belokon | 46633/268394 | 8548 |

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| EXAMINER | |
|---|---|
| TRIEU, THAI BA | |
| **ART UNIT** | **PAPER NUMBER** |
| 3748 | |

DATE MAILED: 11/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/661,849 | BELOKON ET AL. | |
| | Examiner | Art Unit | |
| | Thai-Ba Trieu | 3748 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) *30-32* is/are withdrawn from consideration.

5)☒ Claim(s) *17-29* is/are allowed.

6)☒ Claim(s) *1,2,6,7 and 10-16* is/are rejected.

7)☒ Claim(s) *3-5,8 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *09/12/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims ***1-29***, drawn to ***"a system for generating electrical power for supply to a load having a gas turbine"***, are classified in class ***60***, subclass ***773***.

II. Claims ***30-32***, drawn to ***"a turbocharged engines system"***, are classified in class ***60***, subclass ***597***.

The inventions are distinct, each from the other because of the following reasons:

Inventions of Group I and Group II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different functions.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Donald M. Hill Jr. (Reg. No. 40,646) on Friday November 19, 2004 a provisional election was made without traverse to prosecute the invention of ***Group I, claims 1-29***. Affirmation of this election must be made by applicant in replying to this Office action. Claims ***30-32*** have been withdrawn

from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### *Claim Objections*

Claim 3 is objected to because of the following informalities:

- In claim 3, line 1, ***"electronics"*** before ***"unit"*** should be replaced by **-- electronic --** (for correcting typo error).

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

***Claims 1, 6-7, 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mackay (Patent Number 6,606,864 B2).***

**Regarding claim 1,6-7, 10-14,** Mackay discloses a system for generating electrical power for supply to a load, comprising:

a gas turbine engine comprising:

a first spool (33,34,35,41) including a first shaft (35), a first compressor (33) mounted on the first shaft (33), a first turbine (34) mounted on the first shaft (35), and a combustor (16) operable to combust or react a mixture of fuel and compressed air from the first compressor (33) to produce hot gases that are expanded in the first turbine (34) to produce mechanical power to drive the first compressor (33) (See Figure 5); and

a second spool (11,12,13,14) including a second shaft (14) and at least a second turbine (12) mounted on the second shaft (14), the second turbine (12) arranged to receive gases exhausted from the first turbine (34) and expand the gases to produce mechanical power, the second spool being rotatable independently of the first spool (See Figure 5);

a main generator (41) coupled to one of the first and second spools so as to be rotatably driven thereby, the main generator operable to generate an altemating electrical current for supply to the load (See Figure 5);

a heat exchanger (18) arranged to receive the compressed air from the first compressor (33) and exhaust gases from the second turbine (12), the heat exchanger (18) causing heat transfer from the exhaust gases to the compressed air so as to pre-heat the compressed air prior to combustion in the combustor (16) (See Figure 5); wherein the combustor comprises a catalytic combustor (See Abstract); and

the second spool includes a second compressor (11) that is mounted on the second shaft (14) and is driven by the second turbine (12), the second compressor (11) being arranged to compress air and supply the compressed air to the first compressor (33), which further compresses the air(See Figure 5).

Mackay, in Figure 5, fails to disclose an auxiliary generator/motor.

However, as shown in Figures 17-18, Mackay discloses an auxiliary generator/motor (82) coupled to the other of the first and second spools, the auxiliary generator/motor selectively operable in either a generation mode or a motor mode, the auxiliary generator/motor in the generation mode being operable to extract mechanical power from the spool to which the auxiliary generator/motor is coupled and generate an altemating electrical current for supply to the load, the auxiliary generator/motor in the motor mode being operable to receive electrical power from a source and convert the electrical power into mechanical power that is injected into the spool to which the auxiliary generator/motor is coupled (See Figure 18, Column 13, 32-42).

It would has been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the generator/motor (82) (in Figures 18 and 17) to substitute either the generator (13), or the generator (41) (in Figure 5), to improve the efficiency of the Mackay engine at any operating condition.

**Regarding claim 12-13**, Mackay further discloses

an intercooler (38) arranged between the second compressor (11) and the first compressor (33), the intercooler being operable to cool the compressed air

from the second compressor (11) before the compressed air is supplied to the first compressor (33) (See Figure 5);

a heat exchanger (18) arranged to receive the compressed air from the first compressor (33) and exhaust gases from the second turbine (12), the heat exchanger causing heat transfer from the exhaust gases to the compressed air so as to pre-heat the compressed air prior to combustion in the combustor (16) (See Figure 5).

***Claims 1, and 15-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Rosen (Pub. Number US 2004/0035117 A1), in view of Mackay (Patent Number 6,606,864 B2)***

**Rosen** discloses a system for generating electrical power for supply to a load, comprising:

a gas turbine engine comprising:

a first spool (C1, T1, Gen) including a first shaft (Not Numbered), a first compressor (C1) mounted on the first shaft (Not Numbered), a first turbine (T1) mounted on the first shaft, and a combustor (CC) operable to combust or react a mixture of fuel and compressed air from the first compressor (C1) to produce hot gases that are expanded in the first turbine (T1) to produce mechanical power to drive the first compressor (C1) (See Figure 2a); and

a second spool (T2, Gen) including a second shaft (Not Numbered) and at least a second turbine (T2) mounted on the second shaft, the second turbine (T2) arranged to

receive gases exhausted from the first turbine (T1) and expand the gases to produce mechanical power, the second spool being rotatable independently of the first spool (See Figure 2a);

a main generator (Gen, Gen) coupled to one of the first and second spools so as to be rotatably driven thereby, the main generator operable to generate an altemating electrical current for supply to the load;

wherein the second turbine comprises a free power turbine (T2) (See Figure 2a); and

and wherein the main generator (Gen) is coupled with the second shaft for the free power turbine (T2) and the generator (Gen) is coupled with the first shaft (Not Numbered) (See Figure 2a).

However, Rosen fails or disclose the generator being an auxiliary motor/generator.

Mackay teaches that it is conventional in the multiple pressure gas turbine art, to utilize an auxiliary generator/motor (82) coupled to the other of the first and second spools, the auxiliary generator/motor selectively operable in either a generation mode or a motor mode, the auxiliary generator/motor in the generation mode being operable to extract mechanical power from the spool to which the auxiliary generator/motor is coupled and generate an altemating electrical current for supply to the load, the auxiliary generator/motor in the motor mode being operable to receive electrical power from a source and convert the electrical power into mechanical power that is injected into the spool to which the auxiliary generator/motor is coupled (See Figures 7 and 8);

It would has been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the generator being an auxiliary motor/generator to improve the control and efficiency of the Rosen device at any operation condition.

***Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mackay (Patent Number 6,606,864 B2), in view of Nims (Patent Number 5,799,484).***

MacKay discloses the invention as recited above, and further discloses a controller to control a generator; however, Mackay fails to disclose the controller used to control both generators.

Nims teaches that it is conventional in the art of dual turbo-generator auxiliary power systems, to utilize a controller (read as electronic unit 28) structured and arranged to control operation of the main generator and the auxiliary generator/motor (See Figure 1).

It would has been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the controller to control both generators, as taught by Nims, to improve the efficiency of the Mackay engine at any operating condition.

***Allowable Subject Matter***

Claims 17-29 are allowed.

Claims 3-5, and 8-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

- Mongia et al. (US patent Number 6,313,544 B1) disclose a self-contained energy center for producing mechanical, electrical, and heat energy.

- Dodge et al. (US patent Number 5,718,112) disclose a method and apparatus for destruction of volatile organic compounds.

- Dotson (US patent Number 3,242,347) discloses a gas turbine.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (571) 272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

The following is an examiner's statement of reasons for allowance: None of the cited prior art alone or in combination teaches the claimed combination of a method for operating an electrical generation system having a multi spool gas turbine engine including:

*"controlling operation of the auxiliary generator/ motor in the selected mode to affect an operating condition of the gas turbine engine."*

***Conclusion***

The IDS (PTO-1449) filed on September 12, 2003 has been considered. An initialized copy is attached hereto.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Cardenas, Jr. (US patent Number 6,666,027 B1) discloses a turbine power generation systems and methods using off gas fuel.

- Mackay (US patent Number 6,526,757 B2) discloses a multi pressure mode gas turbine.

- Taylor et al. (US patent Number 6,244,034 B1) discloses a compressor bleed pressure storage for controlled fuel nozzle purging of a turbine power generating system.

- Murata et al. (US patent Number 6,199,366 B1) disclose a gas turbine.

- Gordon et al. (US patent Number 6,073,857) discloses disclose a co-generator utilizing micro gas turbine engine.

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB
November 20, 2004

Thai-Ba Trieu
Patent Examiner
Art Unit 3748